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| 2133 | |

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/070,848 | RAJALA ET AL. | |
| | Examiner | Art Unit | |
| | Steve Nguyen | 2133 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/11/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. Claims 1-50 have been examined.

### *Specification*

The disclosure is objected to because of the following informalities:

- The word "ad" on line 26 of page 2 should be "and".
- The word "be" on line 18 of page 6 should be deleted.
- The word "send" on line 30 of page 11 should be "sent".
- The word "mikroprocessors" on line 21 of page 18 should be "microprocessors".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**2.** Claims 4, 5 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 4:

Claim 4 recites the limitation "said acknowledgment message" in line 34 on page 20 and line 35 on page 21. There is insufficient antecedent basis for this limitation in the claim. Parent claims 1 and 2 refer to the transmission rate of acknowledgment messages, which infer a plurality of messages being sent. The limitation of claim 4 refers to a single specific acknowledgment message, and it is unclear which single message is being referred to out of the plurality of messages being sent. It is assumed that the message being sent in the limitation of claim 4 is another message that is independent from the messages being sent in claims 1 and 2.

As per claim 5:

Parent claim 1 comprises the step of changing the transmission rate of acknowledgment messages in response to the estimated transmission quality of the channel. Meanwhile, depending claim 5 recites that the transmission rate of the acknowledgment messages is changed in dependence on a retransmission of a negatively acknowledged data unit. It is unclear whether the transmission rate should be changed in response to the estimated quality of the channel or whether it should be changed based on the transmission of a negatively acknowledged data unit.

As per claims 8 and 22:

Claims 8 and 22 recite, "wherein said predetermined value is adjusted on the basis of at least one of a transmission rate of said data units, a size of said transmit window and a round-trip delay of said transmission channel." The conditions under which the predetermined value is adjusted under is unclear. The value could be adjusted on the basis of:

- (i) a size of said transmit window, a round-trip delay of said transmission channel, and one or more transmission rates of said data units; or
- (ii) at least one of the elements in the list above (a size of said transmit window, a round-trip delay of said transmission channel, or a transmission rate of said data units).

The limitation described in (ii) will be assumed for the purposes of further examination.

As per claims 18 and 36:

Claims 18 and 36 recite, "wherein said control means is arranged to adjust said predetermined value based on at least one of a transmission rate of said data units, a size of said transmit window and a round-trip delay of said transmission channel." The conditions under which the predetermined value is adjusted under is unclear. The value could be adjusted on the basis of:

- (i) a size of said transmit window, a round-trip delay of said transmission channel, and one or more transmission rates of said data units; or
- (ii) at least one of the elements in the list above (a size of said transmit window, a round-trip delay of said transmission channel, or a transmission rate of said data units).

The limitation described in (ii) will be assumed for the purposes of further examination.

As per claims 9 and 23-27:

Claims 9 and 23-27 recite, "wherein said predetermined threshold value is adjusted on the basis of at least one of a transmission rate of said data units, a size of said transmit window and a round-trip delay of said transmission channel." The

conditions under which the predetermined threshold value is adjusted under is unclear. The value could be adjusted on the basis of:

- (i) a size of said transmit window, a round-trip delay of said transmission channel, and one or more transmission rates of said data units; or
- (ii) at least one of the elements in the list above (a size of said transmit window, a round-trip delay of said transmission channel, or a transmission rate of said data units).

The limitation described in (ii) will be assumed for the purposes of further examination.

As per claims 19 and 37-41:

Claims 19 and 37-41 recite, "wherein said control means is arranged to adjust said predetermined threshold value based on at least one of a transmission rate of said data units, a size of said transmit window and a round-trip delay of said transmission channel." The conditions under which the predetermined threshold value is adjusted under is unclear. The value could be adjusted on the basis of:

- (i) a size of said transmit window, a round-trip delay of said transmission channel, and one or more transmission rates of said data units; or
- (ii) at least one of the elements in the list above (a size of said transmit window, a round-trip delay of said transmission channel, or a transmission rate of said data units).

The limitation described in (ii) will be assumed for the purposes of further examination.

As per claims 21 and 43-50:

Claims 21 and 43-50 recite, "wherein said error control apparatus is arranged in at least one of a mobile station and a network element of a GPRS network." The conditions under which the error control apparatus is arranged is unclear. The apparatus could be arranged on the basis of:

- (i) one or more mobile stations and also a network element of a GPRS network; or
- (ii) at least one of the elements in the list above (a mobile station or a network element of a GPRS network).

The limitation described in (ii) will be assumed for the purposes of further examination.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, 5, 11, 12, and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Crisler et al (US. Pat. 5,477,550) in view of Stevens.

As per claim 1:

Crisler et al (hereafter referred to as Crisler) substantially teaches an error control method for a transmission channel (column 3, lines 1-5) wherein a transmission of data units via said transmission channel is controlled in dependence on the sequence number (column 3, lines 6-9) of a preceding data unit not yet acknowledged (column 3, lines 11-19).

Not explicitly disclosed by Crisler are the steps of:

- Defining a transmit window based on said sequence number of said unacknowledged preceding data unit;
- Allowing the transmission of a data unit only if the sequence number of said data unit lies within said transmit window;
- Estimating a transmission quality of said transmission channel;
- Changing the transmission rate of acknowledgment messages in response to said estimated transmission quality of said transmission channel.

Stevens, in an analogous art, teaches a protocol comprising:

- Defining a transmit window based on said sequence number of said unacknowledged preceding data unit (page 280, section 20.3, paragraph 1);
- Allowing the transmission of a data unit only if the sequence number of said data unit lies within said transmit window (page 280, section 20.3, paragraph 1; Figure

20.4 shows that packets 10 and 11 can not be sent because it is not in the window);

- Estimating a transmission quality of said transmission channel (page 285, section 20.6, paragraph 2 states that TCP observes the rate at which packets should be injected into the network. TCP is estimating channel quality by observing the rate at which packets should be injected into the network and changing that rate based on the channel quality.);
- Changing the transmission rate of acknowledgment messages in response to said estimated transmission quality of said transmission channel (page 285, section 20.6, paragraph 2 states that TCP operates by observing the rate at which packets should be injected into the network is the rate at which the acknowledgments are returned).

Therefore, it would have been obvious to a person in the art at the time the invention was made to combine the method of Crisler with that of Stevens. This modification would have been obvious because a person having ordinary skill in the art at the time the invention was made would have been motivated to do so since Crisler states that the method is based on a sliding window protocol in column 2, line 67 and the method of Stevens describes a sliding window TCP protocol.

As per claim 2:

Stevens states on page 286 that at some point the capacity of the internet will be reaches, and packets will be discarded. At this point, it is necessary for the rate of

acknowledgment messages to decrease. The lack of acknowledgments is what tells the sender that its congestion window is too large (page 286, paragraph 2).

As per claim 5:

Crisler states in column 1, lines 50-55 that if a NACK is returned, the packet is resent. The receiver sends either an ACK or a NACK based on the success of the received packet. If negative acknowledgments are sent, then the transmission rate of the acknowledgment messages is changed since fewer ACKs are being generated due to the presence of NACKs.

As per claim 11:

Crisler et al substantially teaches an error control apparatus for performing a control (column 3, lines 1-5) as to allow a transmission of data units via a transmission channel in dependence on the sequence number (column 3, lines 6-9) of a preceding data unit not yet acknowledged (column 3, lines 11-19).

Not explicitly disclosed by Crisler is:

- detecting means for detecting a transmission quality of said transmission channel; and
- control means for changing the transmission rate of acknowledgment messages in response to the transmission quality detected by said detecting means.

Stevens, in an analogous art, teaches a protocol comprising:

- detecting means for detecting a transmission quality of said transmission channel (page 285, section 20.6, paragraph 2 states that TCP observes the rate at which packets should be injected into the network. TCP is estimating channel quality

by observing the rate at which packets should be injected into the network and changing that rate based on the channel quality.);

- Changing the transmission rate of acknowledgment messages in response to said estimated transmission quality of said transmission channel (page 285, section 20.6, paragraph 2 states that TCP operates by observing the rate at which packets should be injected into the network is the rate at which the acknowledgments are returned).

Therefore, it would have been obvious to a person in the art at the time the invention was made to combine the method of Crisler with that of Stevens. This modification would have been obvious because a person having ordinary skill in the art at the time the invention was made would have been motivated to do so since Crisler states that the method is based on a sliding window protocol in column 2, line 67 and the method of Stevens describes a sliding window TCP protocol.

As per claim 12:

Stevens states that the receiver is responsible for acknowledging sent data on page 280, paragraph 2 under section 20.3. If a data unit is lost or erased, the receiver would not acknowledge it. Therefore the detecting means is arranged to detect a data unit loss or erasure at a receiving end of the transmission channel.

As per claim 15:

A negative acknowledgment is detected at the transmission end of the transmission channel in column 1, lines 65-66 of Crisler.

4. Claims 3-4, 6-9, 13-14, 16-20, 22-27, and 36-42 rejected under 35 U.S.C. 103(a) as being unpatentable over Crisler in view of Stevens as applied to claim 2 above, and further in view of Ayanoglu et al (European Pat. EP 0 695 053 A2).

As per claim 3:

Crisler and Stevens substantially teach the claimed method as applied to claim 2 above but do not explicitly state the step of counting the number of data units which have been successfully received, increasing the count value by a predetermined value when a data unit erasure or loss has been detected, and transmitting an acknowledged message when said count value exceeds a predetermined threshold value.

Ayanoglu et al (hereafter referred to as Ayanoglu), in an analogous art, teaches a method comprising a counter for counting the number of data units successfully received (column 9, lines 15-21), increasing the counter by a predetermined value when a data unit loss has been detected (column 9, lines 38-40), and transmitting an acknowledgment message when the count value exceeds a predetermined threshold (In column 9, lines 26-30 a flow control process is initiated to prevent the transmitter from transmitting. A signal must be sent out as part of the flow control initiation process to inform the transmitter not to send any more packets.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Ayanoglu in combination with the method of Crisler and Stevens by including a counter system that keeps track of acknowledged and unacknowledged messages. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because

one of ordinary skill in the art would have recognized that using a counter to manage packets provides a way to manage the window size by determining which packets have been acknowledged.

As per claim 4:

Crisler, Stevens, and Ayanoglu substantially teach the claimed method as detailed in claim 3 above including the step of increasing the count value by a predetermined value when a data unit loss or erasure is detected. Claim 4 instead includes the limitation of decreasing the predetermined threshold value when a data unit loss or erasure is detected. Increasing a count value until a maximum threshold is reached is equivalent to decreasing the maximum threshold until a minimum is reached. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to decrease the predetermined threshold value when a data unit loss or erasure is detected because it is logically equivalent to increasing the count value by a predetermined value when a data unit loss or erasure is detected.

As per claim 6:

Crisler and Stevens substantially teach the claimed method as applied to claim 5 above but do not explicitly state the step of counting the number of unacknowledged data units, increasing the count value by a predetermined value when a negatively acknowledged data unit has been retransmitted, and polling for a transmission of an acknowledgment message when said count value exceeds a predetermined threshold value.

Ayanoglu, in an analogous art, teaches a method comprising a counter for counting the number of data units successfully received (column 9, lines 15-21), increasing the counter by a predetermined value when a data unit loss has been detected (column 9, lines 38-40), and polling for a transmission of an acknowledgment message from the base station (column 9, lines 3-5 and 31-37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Ayanoglu in combination with the method of Crisler and Stevens by including a counter system that keeps track of acknowledged and unacknowledged messages.

Note: Although the method of Ayanoglu is applied to success acknowledgments, it would have been obvious to use the same method with negative acknowledgments instead by counting the number of unacknowledged data instead of acknowledged data. This would be advantageous in systems that use NACKs instead of ACKs.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using a counter to manage packets provides a way to manage the window size by determining which packets have not been acknowledged.

As per claim 7:

Crisler, Stevens, and Ayanoglu substantially teach the claimed method as detailed in claim 6 above including the step of increasing the count value by a predetermined value when a negatively acknowledged data unit has been retransmitted. Claim 7 instead includes the limitation of decreasing the predetermined threshold value

when a negatively acknowledged data unit has been retransmitted. Increasing a count value until a maximum threshold is reached is equivalent to decreasing the maximum threshold until a minimum is reached. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to decrease the predetermined threshold value when a negatively acknowledged data unit is retransmitted because it is logically equivalent to increasing the count value by a predetermined value when a negatively acknowledged data unit is retransmitted.

As per claims 8 and 22:

Crisler, Stevens, and Ayanoglu substantially teach the claimed methods as detailed in claims 3 and 6 above. Ayanoglu does not explicitly state that the predetermined value is adjusted on the basis of the transmission rate of the data, the size of the window, or the round-trip delay of the channel.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the counter of Ayanoglu on the basis of the data transmission rate when a data loss or erasure has been detected. This modification would have been obvious to one of ordinary skill in the art at the time the invention was made because one of ordinary skill in the art would have recognized that it would be advantageous to increase the predetermined value in cases where both the transmission rate and round-trip delay is high. Increasing the predetermined value appropriately would cause the cellular computing device of Ayanoglu to reach its threshold faster, thereby temporarily preventing the user from sending additional packets. This offers the advantage of allowing lost or erased packets to be resent in a

channel with high delay while proportionately imposing flow control at the user to prevent the transmitting cellular computing device from being overwhelmed by the user. As per claims 9 and 23-27:

Crisler, Stevens, and Ayanoglu substantially teach the claimed methods as detailed in claims 3-8 above. Ayanoglu teaches the predetermined threshold value defining the window size in lines 24-37 of column 9. Although Ayanoglu does not explicitly mention the predetermined threshold value being adjusted, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method to include an adjustable predetermined threshold value. A person of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to adjust the maximum window size to obtain a more versatile system. As per claim 13:

Crisler and Stevens substantially teach the claimed apparatus as applied to claim 11 above but do not explicitly state the apparatus comprising counting means for counting the number of data units which have been received successfully, and comparing means for comparing the count value obtained from said counting means with a predetermined threshold value, wherein said control means is arranged to increase the count value of said counting means by a predetermined value when a data unit erasure or loss has been detected by said detecting means and to initiate a transmission of an acknowledgment message when the comparing result of said comparing means indicate that the count value exceeded said predetermined threshold value.

Ayanoglu, in an analogous art, teaches an apparatus comprising a counter for counting the number of data units successfully received (column 9, lines 15-21), increasing the count value of the counting means by a predetermined value when a data unit loss has been detected (column 9, lines 38-40; a comparing means must be present in order to decide on whether the counter has exceeded the threshold), and transmission of an acknowledgment message when the count value exceeded a predetermined threshold value (In column 9, lines 26-30 a flow control process is initiated to prevent the transmitter from transmitting. A signal must be sent out as part of the flow control initiation process to inform the transmitter not to send any more packets.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Ayanoglu in combination with the method of Crisler and Stevens by including a counter system that keeps track of acknowledged and unacknowledged messages. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using a counter to manage packets provides a way to manage the window size by determining which packets have been acknowledged.

As per claim 14:

Crisler, Stevens, and Ayanoglu substantially teach the claimed aparatus as detailed in claim 13 above including a control means arranged to increase the count value of the counting means by a predetermined value when a data unit loss or erasure

is detected by the detecting means. Claim 14 instead includes the limitation of the control means arranged to decrease the predetermined threshold value when a data unit loss or erasure has been detected by the detecting means. Increasing a count value until a maximum threshold is reached is equivalent to decreasing the maximum threshold until a minimum is reached. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to decrease the predetermined threshold value when a data unit loss or erasure is detected because it is logically equivalent to increasing the count value by a predetermined value when a data unit loss or erasure is detected.

As per claim 16:

Crisler and Stevens substantially teach the claimed apparatus as applied to claim 15 above but do not explicitly state a counting means for counting the number of unacknowledged data units transmitted via said transmission channel; and comparing means for comparing the count value of said counting means with a predetermined threshold value, wherein said control means is arranged to increase the count value by a predetermined value when a negatively acknowledged data unit is retransmitted, and to poll for a transmission of an acknowledgment message when the comparing result of said comparing means indicates that the count value has exceeded said predetermined threshold value.

Ayanoglu, in an analogous art, teaches an apparatus comprising a counter for counting the number of data units successfully received (column 9, lines 15-21), increasing the count value by a predetermined value when a data unit loss has been

detected (column 9, lines 38-40; a comparing means must be present in order to decide on whether the counter has exceeded the threshold), and polling for a transmission of an acknowledgment message from the base station (column 9, lines 3-5 and 31-37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system of Ayanoglu in combination with the method of Crisler and Stevens by including a counter system that keeps track of acknowledged and unacknowledged messages.

Note: Although the system of Ayanoglu is applied to positive acknowledgments, it would have been obvious to use the same method with negative acknowledgments instead by counting the number of unacknowledged data instead of acknowledged data. This would be advantageous in systems that use NACKs instead of ACKs.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using a counter to manage packets provides a way to manage the window size by determining which packets have not been acknowledged.

As per claim 17:

Crisler, Stevens, and Ayanoglu substantially teach the claimed apparatus as detailed in claim 16 above including a control means arranged to increase the count value by a predetermined value when a negatively acknowledged data unit is retransmitted. Claim 17 instead includes the limitation of a control means arranged to decrease the predetermined threshold value when a negatively acknowledged message has been detected by the detecting means. Increasing a count value until a maximum

threshold is reached is equivalent to decreasing the maximum threshold until a minimum is reached. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to decrease the predetermined threshold value when a negative acknowledgment message is received because it is logically equivalent to increasing the count value by a predetermined value when a negatively acknowledged data unit is retransmitted.

As per claims 18 and 36:

Crisler, Stevens, and Ayanoglu substantially teach the claimed apparatuses as detailed in claims 13 and 16 above. Ayanoglu does not explicitly state that the control means is arranged to adjust the predetermined value on the basis of the transmission rate of the data, the size of the window, or the round-trip delay of the channel.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the counter of Ayanoglu on the basis of the data transmission rate when a data loss or erasure has been detected. This modification would have been obvious to one of ordinary skill in the art at the time the invention was made because one of ordinary skill in the art would have recognized that it would be advantageous to increase the predetermined value in cases where both the transmission rate and round-trip delay is high. Increasing the predetermined value appropriately would cause the cellular computing device of Ayanoglu to reach its threshold faster, thereby temporarily preventing the user from sending additional packets. This offers the advantage of allowing lost or erased packets to be resent in a

channel with high delay while proportionately imposing flow control at the user to prevent the transmitting cellular computing device from being overwhelmed by the user.

As per claims 19 and 37-41:

Crisler, Stevens, and Ayanoglu substantially teach the claimed apparatuses as detailed in claims 13-18 above. Ayanoglu teaches the predetermined value defining the window size in lines 24-37 of column 9. Although Ayanoglu does not explicitly mention the predetermined value being adjusted by the control means, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method to include an adjustable predetermined value. A person of ordinary skill in the art at the time the invention was made would have been motivated to do so in order to adjust the maximum window size to obtain a more versatile system.

As per claim 20:

Crisler, Stevens, and Ayanoglu substantially teach the claimed apparatus as detailed in claim 16 above but do not explicitly disclose a polling bit set in the header of the data unit to be transmitted. However, Stevens teaches an optional block in the header of a data unit on page 34, Figure 3.1.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a polling bit in the header of a data unit. One of ordinary skill in the art at the time the invention was made would have been motivated to do so since an optional block in the data unit header is available for an extra bit and channel resources would be used more efficiently by including the polling

bit with the header instead of sending it separately as disclosed by Stevens on page 265, section 19.3, paragraph 2.

As per claim 42:

Crisler, Stevens, and Ayanoglu substantially teach the claimed method as detailed in claim 27 above but do not explicitly disclose a polling bit set in the header of the data unit to be transmitted. However, Stevens teaches an optional block in the header of a data unit on page 34, Figure 3.1.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a polling bit in the header of a data unit. One of ordinary skill in the art at the time the invention was made would have been motivated to do so since an optional block in the data unit header is available for an extra bit and channel resources would be used more efficiently by including the polling bit with the header instead of sending it separately as disclosed by Stevens on page 265, section 19.3, paragraph 2.

5. Claim 10, 21, and 43 rejected under 35 U.S.C. 103(a) as being unpatentable over Crisler in view of Stevens as applied to claim 1 above, and further in view of Rathonyi et al (US. Pat. 6,359,877).

As per claim 10:

Crisler and Stevens substantially teach the claimed method as detailed in claim 1 above. However, Crisler does not explicitly disclose the transmission channel being an RLC connection for transmitting RLC data blocks in an uplink or downlink direction of a

GPSR network. Rathonyi et al, in an analogous art, states that GPRS is the packet mode for the Global System for Mobile Communication (GSM) standard and is designed to allow a single user to occupy more than one transmission resource simultaneously (column 2, lines 21-25). Rathonyi et al further states in lines 59-64 of column 5 that RLC blocks are used to provide efficient transmission on the radio interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Crisler and Stevens to a RLC connection in a GPRS network. One of ordinary skill in the art at the time the invention was made would have been motivated to do so because one of ordinary skill in the art would have recognized that it would be advantageous to apply an error control method to a transmission channel in which an RLC connection of a GPRS network is used. RLC provides the advantages of efficient transmission in a GPRS network, and GPRS is the packet mode used in a standardized global communication system.

As per claims 21 and 43:

Crisler and Stevens substantially teach the claimed apparatus as detailed in claims 11 and 12 above. However, Crisler does not explicitly disclose the apparatus being arranged in a mobile station or a network element of a GPRS network. Rathonyi et al, in an analogous art, states that GPRS is the packet mode for the Global System for Mobile Communication (GSM) standard and is designed to allow a single user to occupy more than one transmission resource simultaneously (column 2, lines 21-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Crisler and Stevens to a network

element of a GPRS network. One of ordinary skill in the art at the time the invention was made would have been motivated to do so because one of ordinary skill in the art would have recognized that GPRS offers the advantages of allowing a single user to occupy more than one transmission resource simultaneously and that the application of an error control method would make it more reliable.

6. Claims 28-35 and 44-50 rejected under 35 U.S.C. 103(a) as being unpatentable over Crisler in view of Stevens in view of Ayanoglu as applied to claims 2-9 and 13-20, respectively, and further in view of Rathonyi et al (US. Pat. 6,359,877).

As per claims 28-35:

Crisler and Stevens substantially teach the claimed methods as detailed in claims 2-9 above. However, Crisler does not explicitly disclose the transmission channel being an RLC connection for transmitting RLC data blocks in an uplink or downlink direction of a GPSR network. Rathonyi et al, in an analogous art, states that GPRS is the packet mode for the Global System for Mobile Communication (GSM) standard and is designed to allow a single user to occupy more than one transmission resource simultaneously (column 2, lines 21-25). Rathonyi et al further states in lines 59-64 of column 5 that RLC blocks are used to provide efficient transmission on the radio interface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Crisler and Stevens to a RLC connection in a GPRS network. One of ordinary skill in the art at the time the invention

was made would have been motivated to do so because one of ordinary skill in the art would have recognized that it would be advantageous to apply an error control method to a transmission channel in which an RLC connection of a GPRS network is used. RLC provides the advantages of efficient transmission in a GPRS network, and GPRS is the packet mode used in a standardized global communication system.

As per claims 44-50:

Crisler and Stevens substantially teach the claimed apparatuses as detailed in claims 13-20 above. However, Crisler does not explicitly disclose the apparatus being arranged in a mobile station or a network element of a GPRS network. Rathonyi et al, in an analogous art, states that GPRS is the packet mode for the Global System for Mobile Communication (GSM) standard and is designed to allow a single user to occupy more than one transmission resource simultaneously (column 2, lines 21-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Crisler and Stevens to a network element of a GPRS network. One of ordinary skill in the art at the time the invention was made would have been motivated to do so because one of ordinary skill in the art would have recognized that GPRS offers the advantages of allowing a single user to occupy more than one transmission resource simultaneously and that the application of an error control method would make it more reliable.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Nguyen whose telephone number is (571) 272-7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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